



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,977	03/01/2004	Jun Koide	1232-5313	2115
27123	7590	12/10/2004	EXAMINER	
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			BLACKMAN, ROCHELLE ANN J	
			ART UNIT	PAPER NUMBER
			2851	

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/790,977	Applicant(s) KOIDE, JUN	
	Examiner Rochelle Blackman	Art Unit 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

Claims 5 and 14 are objected to because of the following informalities: in claim 5, line 9 of the claim, "width" should be - -width- -; in claim 14, line 2 of the claim, there should be a space between "claim" and "13". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Robinson et al. (U.S. Patent No. 6,260,972).

Robinson discloses an illumination optical system (see FIGS. 1-15) a light source (4); an optical integrator (6, 14) which uses a lens array (see 6, 14) to perform splitting of a luminous flux incident as a generally collimated luminous flux from the light source in a first axis direction in a two-dimensional section orthogonal to a traveling direction of the luminous flux; and a polarization conversion element (16, 18) which includes a polarization beam splitter array (18), a plurality of 1/2 wave plates (62), and a mask (16), the polarization beam splitter array having a plurality of polarization beam splitters (54) arranged in multiple stages corresponding to a plurality of predetermined lens

Art Unit: 2851

areas (see 14) in the lens array, each of the $1/2$ wave plates rotating a polarization direction of first polarized light (58 – P polarized light) substantially 90 degrees out of the first and second polarized light (60 – S polarized light) with polarization directions orthogonal to each other split by each of the polarization beam splitters, and the mask covering a plurality of areas (see areas covered by 16 in FIG. 5) out of incident surfaces of the polarization beam splitter array to prevent incident of the second polarized light on each of the $1/2$ wave plates, wherein the light source is a discharge gas exciting arc tube of a DC drive type (see 4 in FIGS. 1 and 2); wherein the mask has light-transmitting portions (see 52), and a luminous flux transmitted through each light-transmitting portion of the mask has light intensity distribution including a higher light intensity in a central portion than a peripheral portion thereof (the “light intensity” in a “central portion” of aperture 52 is considered to be higher than at the sides of the aperture, due to fact that the “central portion” of aperture 52 is free from any sort of light masking); wherein the illumination optical system illuminates an illumination surface in a generally rectangular shape, and the first axis direction is a short side direction of the illumination surface (see FIG. 12); further comprising optical intensity converting member for converting light intensity distribution in a second axis direction orthogonal to the first axis direction on the two-dimensional section (also see 6, 14); wherein the illumination optical system illuminates an illumination surface with a generally telecentric luminous flux, and light intensity of the luminous flux on the illumination surface varies depending on a deviation angle of an incident ray with respect to a normal to the illumination surface, and the illumination optical system illuminates the illumination

Art Unit: 2851

surface such that, in the light intensity distribution, a ratio of angle widths at which light intensity reaches half of a peak value in each of two axis directions orthogonal to each other on the illumination surface is an aspect ratio of 2:1 or higher (see FIGS. 6-15 and disclosure thereof); wherein, in the light intensity distribution, a ratio of an angle width at which light intensity reaches half of a peak value in a second axis direction orthogonal to the first axis direction to an angle width at which light intensity reaches half of a peak value in the first axis direction is an aspect ratio of 2:1 or higher (also see FIGS. 6-15 and disclosure thereof); wherein the illumination optical system illuminates an illumination surface with a generally telecentric luminous flux, and light intensity of the luminous flux on the illumination surface varies depending on a deviation angle of an incident ray with respect to a normal to the illumination surface, and in the light intensity distribution, a maximum value of an angle width at which light intensity reaches half of a peak value in one of two axis directions orthogonal to each other on the illumination surface is twice or more a maximum value of an angle width at which light intensity reaches half of a peak value in the other direction (also see FIGS. 6-15 and disclosure thereof); wherein, in the light intensity distribution, a maximum value of an angle width at which light intensity reaches half of a peak value in a second axis direction orthogonal to the first axis direction is twice or more a maximum value of an angle width at which light intensity reaches half of a peak value in the first axis direction (also see FIGS. 6-15 and disclosure thereof); a projection display optical system (see FIGS. 1-15) comprising: the illumination optical system; a spatial light modulator (26, 30, 36) which modulates a luminous flux emerging from the illumination optical system by a group of

Art Unit: 2851

pixels arranged two-dimensionally; and a projection lens (40) which projects the luminous flux modulated by the spatial light modulator onto a projection surface (see *screen* in col. 3, lines 52-57); a projection display apparatus (see FIGS. 1-15) comprising: a light source (4) which is a discharge gas exciting arc tube of a DC drive type; an image display system (see FIGS. 1-15) comprising: the projection display apparatus; and a screen (see *screen* in col. 3, lines 52-57) which forms the projection surface, wherein the image display system allows an observer to observe a projected image with one of divergent reflection light from the screen and divergent transmission light through the screen, each light having predetermined directivity (see FIGS. 6-15); a light source (4) in which a cathode electrode and an anode electrode are provided, and by applying a DC voltage a discharge gas is excited and light is emitted from the vicinity of the cathode electrode (see 4 in FIGS. 1 and 2); a lens array (6, 14) in which a plurality of lenses are arranged in a first direction substantially orthogonal to an illumination direction, each lens condensing a part of a luminous flux from the light source in the first direction; and a mask (16) in which light-transmitting portions (52) transmitting luminous fluxes condensed by the lenses and light-blocking portions (see 16 in FIG. 5) blocking the luminous fluxes condensed by the lenses are arranged alternately in the first direction; a polarization beam splitter array (18) in which first polarization beam splitters (56 - polarization beam splitters with element 62 attached) and second polarization beam splitters (polarization beam splitters without element 62 attached, adjacent to 56) are arranged alternately in the first direction, each first polarization beam splitter reflecting a first polarized light (60 - S polarized light) out of

Art Unit: 2851

transmitted light through the light-transmitting portion and transmitting a second polarized light (58 – P polarized light) out of the transmitted light, the polarization direction of the second polarized light being rotated by substantially 90 degrees from the polarization direction of the first polarized light, each second polarization beam splitter reflecting the first polarized light reflected by the first polarization beam splitter in a direction substantially parallel to the transmitting direction of the second polarized light; wave plates (62) which rotate the polarization direction of the first polarized light from the second polarization beam splitters substantially 90 degrees; a light modulator (26, 30, 36) which modulates the second polarized light at a substantial rectangular area having a short side in the first direction; and a projection optical system (40) which projects modulated light by the light modulator; a screen which has a projection surface (see *screen* in col. 3, lines 52-57).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rochelle Blackman whose telephone number is (571) 272-2113. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2851

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RB


JUDY NGUYEN
PRIMARY EXAMINER